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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Richard Hartley

Group Art Unit: 2622

Serial No.: 10/800,474

Examiner: Jean Wicel Desir

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Attorney Docket: UDL-114

Title: Video Signal Processor for High Definition Monitor

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David P. Gordon

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Date

Honorable Commissioner for Patents
Alexandria, VA 22313

Sir:

SUBMITTAL OF PRIORITY DOCUMENT

Enclosed herewith is a certified copy of the priority document, Great Britain application number 0401441.1 in the above-referenced patent application as required by 35 U.S.C. 119.

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Enclosure



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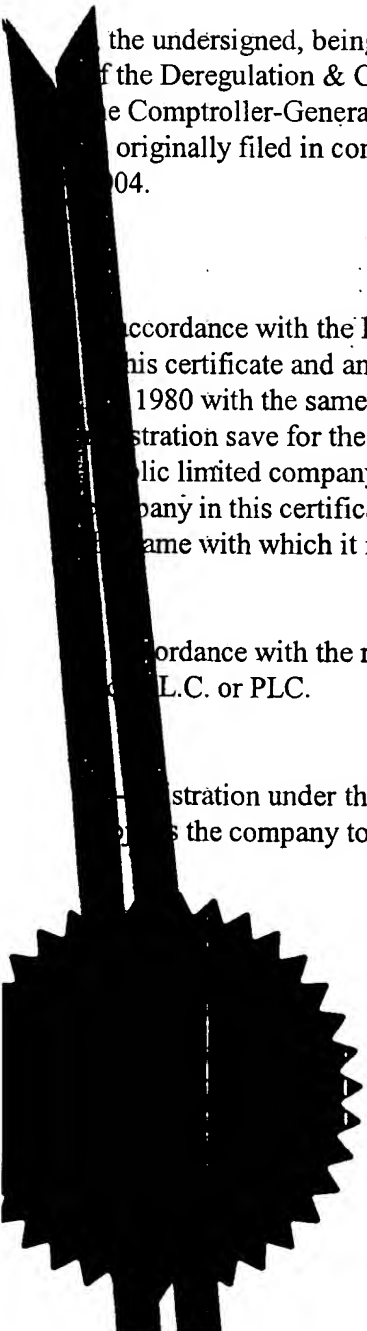
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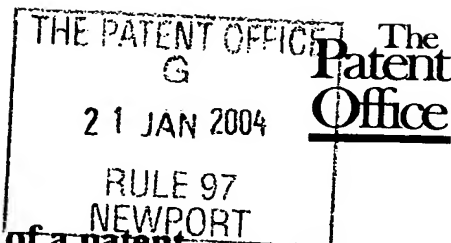
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The Patent Office

Cardiff Road
Newport
South Wales
NP9 1RH

1. Your reference

SHG/P501549

2. Patent application number

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22 JAN

0401441.1

3. Full name, address and postcode of the or of each applicant (underline all surnames)

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Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

4. Title of the invention

Video Signal Processor

5. Name of your agent (if you have one)

URQUHART-DYKES & LORD

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

Three Trinity Court
21-27 Newport Road
CARDIFF
CF24 0AA

Patents ADP number (if you know it)

1644025

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number
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Date of filing
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing
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8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:


- a) any applicant named in part 3 is not an inventor, or
 - b) there is an inventor who is not named as an applicant, or
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NO

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Priority documents	-
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Statement of inventorship and right to grant of a patent (Patents Form 7/77)	-
Request for preliminary examination and search (Patents Form 9/77)	-
Request for substantive examination (Patents Form 10/77)	-
Any other documents (please specify)	-

11. I/We request the grant of a patent on the basis of this application.

Signature 	Date
URQUHART-DYKES & LORD	20 January 2004

12. Name and daytime telephone number of person to contact in the United Kingdom	Stewart H. Gibson	029 2048 7993
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VIDEO SIGNAL PROCESSOR

The present invention relates to a video signal processor for providing the display, on a monitor screen, of both a video picture and at least one graphical representation
5 of an associated signal characteristic, such as a video waveform, a vector diagram, an audio level display and an audio phase display.

Video signal processors are known in which a normal definition video signal is processed in order to provide a
10 display of the video picture on part of a monitor screen, and graphical representations of associated signal characteristics on other parts of the same monitor screen. Typically the picture is displayed in one quarter of the screen, whilst a video waveform is displayed in a second quarter of the screen,
15 a vector diagram is displayed in a third quarter of the screen, and audio level and phase information is displayed in graphical form in a fourth quarter of the screen.

Where the normal definition video signal is processed for display on a normal definition monitor, because the picture
20 is displayed at a quarter of its original size, it is displayed at a reduced resolution. The alternative is to process the normal definition video signal for display on a high resolution computer monitor: this preserves the original picture resolution but the interlaced fields of the incoming normal
25 definition video signal must be de-interlaced for display on the computer monitor and this creates undesirable artifacts in the processed signal and accordingly in the display.

In accordance with the present invention, there is provided a video signal processor which comprises an input for
30 receiving a video signal of a first definition, resizing means for processing the input video signal to provide a picture component signal for creating a picture display of reduced size, analysing means for processing the input video signal to

provide a measurement component signal for creating a display of a graphical representation of at least one characteristic associated with the input video signal, a video signal generator for generating a video signal of a second definition
5 for providing a background display, and means for combining the picture component signal, the measurement component signal and the video signal of the second definition, to provide an output video signal.

The signal processor is accordingly able to process a
10 normal definition video signal for the display of the picture in part of a high definition monitor screen, whilst displaying, in another part of the screen, a graphical representation of at least one characteristic of the video signal.

Typically the video signal processor is arranged so
15 that the picture will be displayed in one quarter of the monitor screen, with a video waveform, a vector diagram and audio information displayed in the other quarters of the screen.

Typically the incoming (normal definition) video signal
20 will consist of a first plurality of horizontal lines (e.g. 625 lines) made up of two interlaced fields, and the output (high definition) video signal will consist of a greater number of horizontal lines (e.g. 1125 lines) made up of two interlaced fields.

25 It will be appreciated that the picture as displayed on the high definition monitor screen will, despite its reduced size, maintain its normal resolution.

An embodiment of the present invention will now be described by way of example only and with reference to the
30 accompanying drawings, in which:

FIGURE 1 shows the typical display provided by a video signal processor; and

FIGURE 2 is a block diagram of a video signal processor in accordance with the present invention.

35 Referring to Figure 1 of the drawings, typically a

video signal processor provides, from an incoming video signal, a processed output signal which creates a display, on a monitor screen, which is divided into four quarters as shown. In one quarter A, the video picture itself is displayed. In a second
5 quarter B, one or more video waveforms are displayed. In a third quarter C, one or more vector diagrams are displayed. In the fourth quarter D, audio level and audio phase information is displayed in graphical form.

Referring to Figure 2, a video signal processor in
10 accordance with the present invention processes an incoming normal definition video signal S to provide an output video signal S' which creates, on a high definition monitor screen, a display of the form shown in Figure 1. In the UK, for example, the normal definition video signal S is of 625
15 horizontal line format (made up of two interlaced fields of 312.5 lines each), whilst the high definition output video signal S', required by the high definition monitor, is of 1125 horizontal line format (made up of two interlaced fields of 562.5 lines each).

20 The video signal processor includes a video signal generator G which generates a blank video signal V of high definition format (i.e. 1125 horizontal lines made up of two interlaced fields of 562.5 lines each), to create a background. The processor further comprises a resizing circuit R which
25 receives the incoming video signal S and processes this to provide an output video picture signal P, to create the reduced-size (i.e. quarter-size) picture on the monitor. The processor also comprises a signal measurement or analysis circuit M which also receives the incoming video signal S and,
30 from this, derives a measurement or analysis signal W which creates the video waveform, vector diagram and audio information displays on the monitor. The processor further comprises an output circuit O which combines the component signals V, P and O (superimposing the picture and measurement
35 signals on the high definition background signal V) to form the

output video signal S' .

In use, the output video signal S' is fed to a high definition monitor to create a display of the form shown in Figure 1. The picture is displayed of reduced (quarter) size, 5 but it will be appreciated that its resolution will be maintained, and will correspond with the resolution of the picture created had the incoming video signal S been fed directly to a normal definition monitor, for display of the picture full-size on that monitor.

1/2

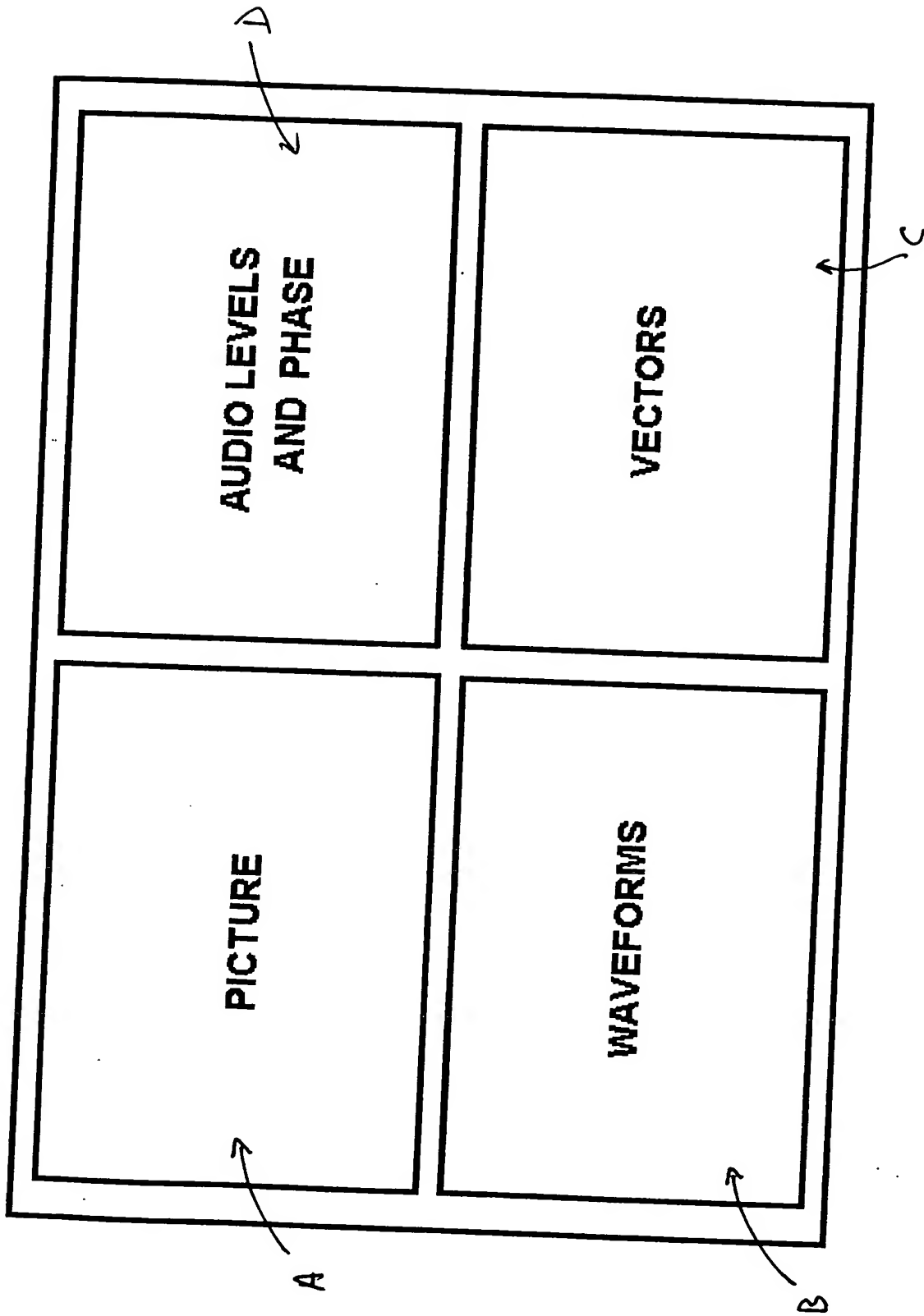


Figure 1

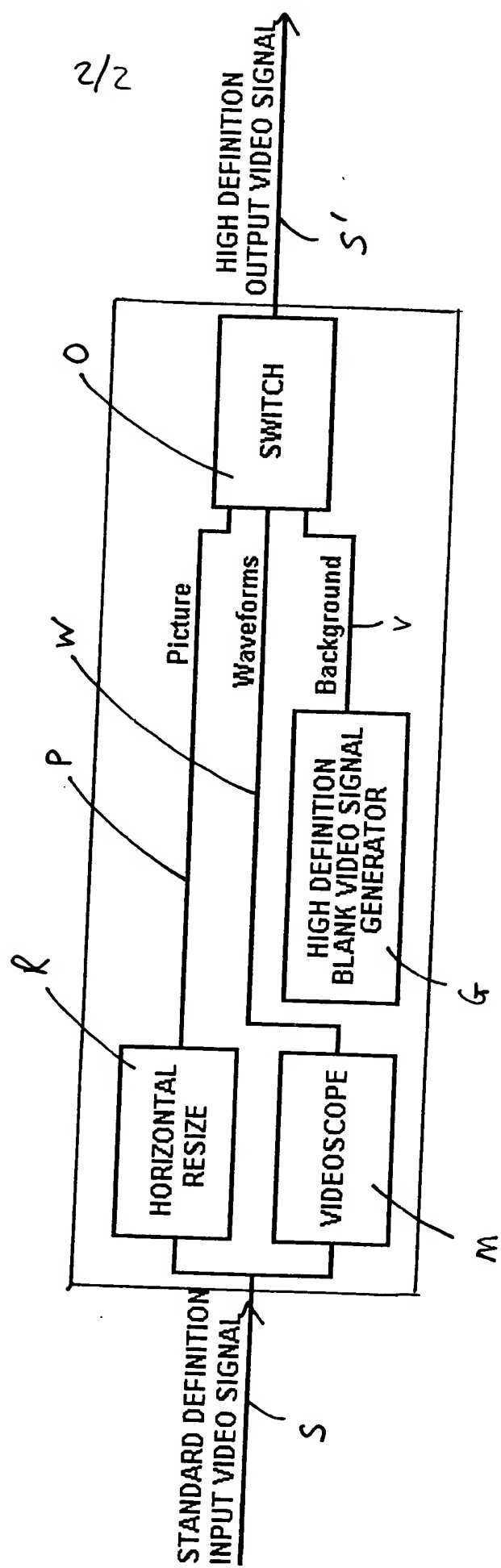


Figure 2

1/2

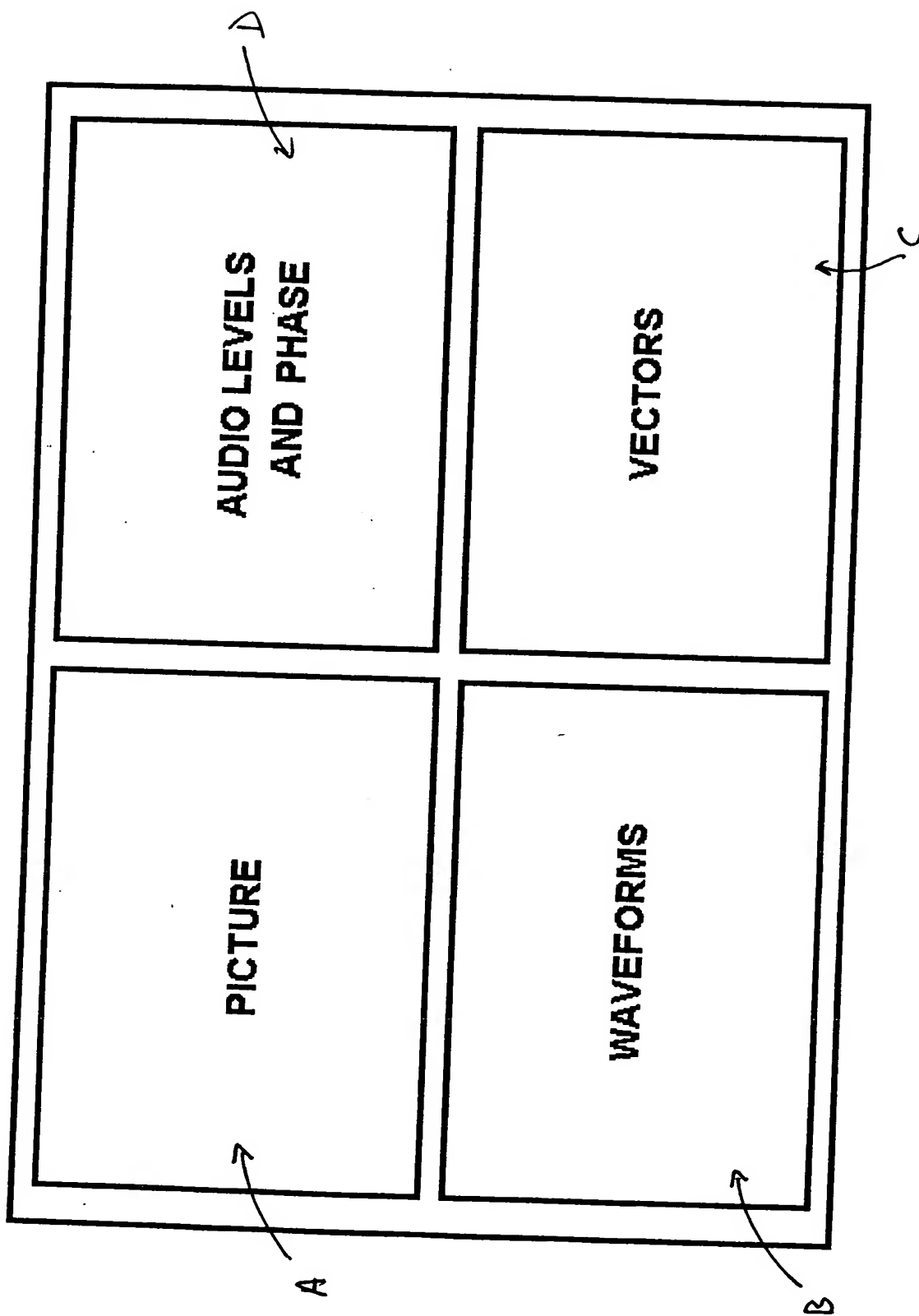


Figure 1